

## ABSTRACT OF THE DISCLOSURE

An optical navigation sensor device and an image processing method using a 2-dimensional sequential image process are disclosed. A pre-processor stores digital voltage values of respective pixels of an image received from a pre-processor in a memory, performs a pre-process for the digital voltage values of respective pixels sequentially received from the memory, thereby producing a pre-processed current image, and extracts a pre-processed current central image from the pre-processed current image. A motion coordinate calculator stores the pre-processed current central image as X/Y-axis reference image candidates, determines replacement of X/Y-axis reference images for calculation of motion coordinate values of a next pre-processed image in accordance with X/Y-axis motions of the pre-processed current image, and compares the pre-processed current image with the X/Y-axis reference images, thereby calculating X/Y-axis motion coordinate values of the pre-processed current image.